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Strategies for Cryopreserving Clonally Propagated Crops

Successful cryopreservation of clonally propagated material requires optimization of source plant material, cryoprotective treatment, cooling rate, and recovery method. Physiology, growth conditions and technical expertise determine suitability of source plant material for preservation.

Understanding the mechanism of cryopreservation and recovery in diverse species and model organisms helps refine methods and improve techniques.

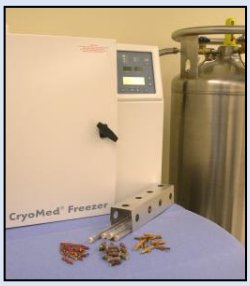
Diverse source materials

Dormant buds of apple

Greenhouse-grown Citrus

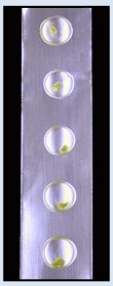
in vitro mint

Some cooling options



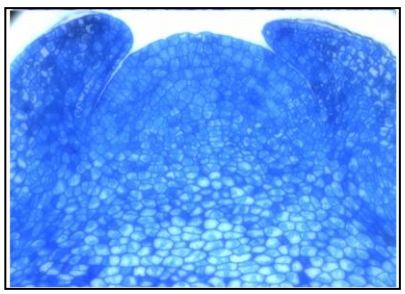
Slow-cooling freezer

Cryovial

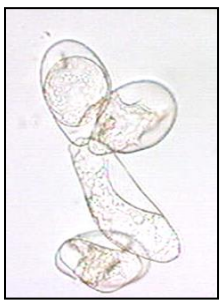


Foil strips

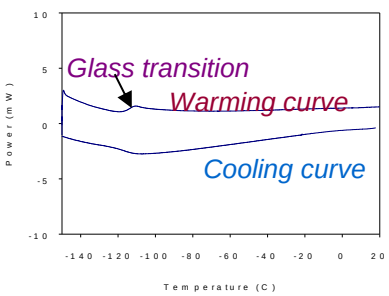
PGPRU techniques used to understand cryopreservation procedures and responses



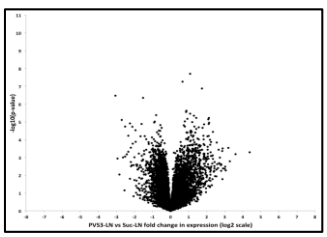
Citrus shoot tip after LN



Plasmolysis after cryoprotectant exposure

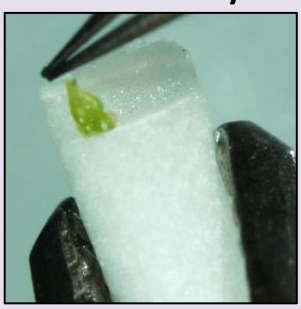


Calorimetry to measure ice and glass transitions in shoot tips and buds



Genes expressed during regrowth of cryopreserved Arabidopsis shoot tips

Recovery methods



Micrografts of Citrus

Regrowth of grape on medium

Grafting apple

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